

REMARKS

The last Office Action has been carefully considered.

It is noted that claims 1-3 and 8-10 are rejected under 35 USC 102 over the patent to Caldwell.

Claim 4-7 and 11 are rejected under 35 USC 103 over the patent to Caldwell.

After carefully considering the Examiner's ground for the rejection of the claims, applicant has amended claim 1, the broadest claim on file, and added another independent claim 14 as well as two dependent claims 12 and 13. Claims 10 and 11 have been cancelled.

It is respectfully submitted that claims 1 and 14 clearly and patentably distinguish the present invention from the reference applied by the Examiner against the original claims since the construction defined now in these claims differs

essentially and in an unobvious highly advantageous manner from the construction disclosed in the reference.

Turning now to the reference, in particular, to the patent to Caldwell, it can be seen that in this reference the grid in its cross section has the shape of a part of the circle with its center in the target, as can be seen in the attached FIG.A. In contrast, as defined now in claims 1 and 14, the grid in accordance with the applicant's invention is flat as shown in the attached FIG.B.

As a result, with the grid of the applicant's invention the object can be located at a very small distance from the grid, usually 10-15mm, while in the reference it cannot be smaller than 46 mm. (the object must always be above the grid). With the focal distance of 1000 mm, the geometrical unsharpness for the grid in accordance with the present invention is

I.Z. 10/25/93

I.Z. 10/25/93

$$N_1 = \frac{2.5 \times 15}{1000 - 15} = .038 \text{ mm,}$$

I.Z. 10/25/93

while for the grid in accordance with the reference, it is

$$N_2 = \frac{2.5 \times 46}{1000 - 46} = .12 \text{ mm}$$

I.Z. 10/25/93

It can be seen that the geometrical out-of-sharpness of

the grid in accordance with the present invention is practically not recognizable, it is only 38 mkm, while it dramatically increases for the operation with the grid in accordance with the reference and the information about the objects with  $L_1$  less than 15 mm is completely lost. This is simply unacceptable in modern diagnostics.

I. Z. 10/25/93

When the grid is designed in accordance with the present invention, it moves with all its cross sections reciprocatingly in a flat space parallel to itself. In contrast, the grid in the reference in the cross section moves along a circle, in the plane which is parallel to the side of the grid, with oscillation. It further increases unsharpness.

I. Z. 10/25/93

In the reference the square or rectangular cells move along their diagonals, so that during the exposure time one or more cells have to pass, with the preferable square shape and the movement at the angle of  $45^\circ$  as shown in FIG.C. In contrast in the applicant's invention the cells in the

shape of squares or <sup>4</sup>prallelograms can be located relative to the side which is parallel to the direction of movement at the angles calculated in accordance with the Mattson formulas, as shown in FIG.D.

I.2. 10/25/93

As a result, with the grid of the reference the images of the sides of, for example, square cells will be erased, while the images of the apexes of the squares will not be erased since during the movement they will be superposed over one another and will not transmit radiation, <sup>and to form of the visible lines on the image of an object,</sup> as can be seen in FIG. E.

I.2. 10/25/93

I.2. 10/25/93

In contrast, when the grid is designed in accordance with the applicant's invention the image of an object will be free from the images of <sup>the lines on the image of an object,</sup> as can be seen from FIG.F.

I.2. 10/25/93

Furthermore, in the device of Caldwell the screen members are composed of lead which absorbs X-ray radiation and are connected with a supporting frame 28. The members or strip of lead are thick and high since lead is very soft, and the grid with thin strips will be deformed. The thick strips and the thick grid worsen the image and increase the radiation dose. The cells are filled with a hard, supporting

material to prevent bending of the strips, such as bacelite, condencite, celluloid, see page 4, 70-75, and FIG.3.

In contrast, in the applicant's invention the grid itself (its main portion) is composed from a hard and X-ray transmitting material, which however is covered over all its surfaces with an X-ray absorbing material, so that a hard monolithic system is formed, and the cells are filled with gas (air) or vacuumed and no supporting material inside the cells is needed. This allows passage through the grid of soft radiation which carries information about hard-to-detect objects and therefore diagnostics of early pathology with higher chances for its curing.

It is therefore believed to be clear that the X-ray grid as defined in claims 1 and 14 clearly and patentably distinguishes over the grid disclosed in the reference, since it is different structurally and provides for unobvious highly advantageous

results which cannot be obtained from the construction disclosed in the reference.


Also claims 4-7, 12 and 13 contain features which are not disclosed in the reference and cannot be derived from it. It is therefore respectfully submitted that these claims should be considered as patentable not only because they depend on the presumably allowable claim 1, but also because they contain patentable subject matter per se.

Reconsideration and allowance of the present application with all claims currently on file is most respectfully requested.

Should the Examiner require or consider necessary that the specification and/or claims and/or drawings be further amended to more clearly distinguish the present invention from the prior art and to pass the application to issue, he is respectfully authorized and requested to do so by the Examiner's Amendment. Alternatively, he

is invited to telephone the undersigned and to discuss this application personally with him, to promptly pass the case to issue.

Respectfully submitted,



I. Zborovsky  
Agent of Applicant  
Reg. No. 28 563